GAO

United States General Accounting Office

Report to the Chairman, Committee on Armed Services, U.S. Senate

January 1993

DESERT SHIELD/STORM

Air Mobility Command's Achievements and Lessons for the Future

GAO/NSIAD-93-70

GAO

United States
General Accounting Office
Washington, D.C. 20548

National Security and
International Affairs Division

B-252540

January 25, 1993

The Honorable Sam Nunn
Chairman, Committee on Armed Services
United States Senate

Dear Mr. Chairman:

This report describes the Air Mobility Command's achievements in Operation Desert Shield/Storm. The Air Mobility Command performed well under demanding circumstances, but several factors constrained its ability to transport troops and cargo effectively during the deployment.

We are sending copies of this report to the Ranking Minority Member of your Committee; other appropriate congressional committees; the Secretaries of Defense and the Air Force; the Director, Office of Management and Budget; and other interested parties.

This report was prepared under the direction of Nancy R. Kingsbury, Director, Air Force Issues, who may be reached on (202) 275-4262 if you or your staff have any questions. Other major contributors are listed in appendix II.

Sincerely yours,

Frank C. Conahan
Assistant Comptroller General

Executive Summary

Purpose

Operation Desert Shield/Storm involved the largest airlift in history over a short period of time. On August 7, 1990, 5 days after Iraq invaded Kuwait and the same day the U.S. National Command Authorities decided to send the initial wave of troops to the Middle East, the first Air Force airlifter departed for Saudi Arabia. Airlift transported the first combat forces and initial cargo to Saudi Arabia, flying a total of 15,800 missions and carrying 544,000 tons of cargo—about 15 percent of the total dry cargo—and 501,000 passengers to the theater of operations.

To provide the Congress with information on this airlift effort, GAO evaluated the Air Force Air Mobility Command's (AMC) airlift operation. The Military Airlift Command became AMC on June 1, 1992; thus, GAO uses the new title and abbreviation in this report. GAO's specific objectives were to identify and assess (1) constraints on the airlift operation, (2) actions taken by the Department of Defense (DOD) to alleviate these constraints, (3) characteristics of the Operation that increased stress on AMC's aircrews, and (4) issues regarding AMC reservists.

Background

As a major command of the U.S. Air Force and a component command of the U.S. Transportation Command (TRANSCOM), AMC is responsible for aerial deployment and refueling, resupply of combat forces, and other major missions. AMC's military strategic airlift fleet during Desert Shield/Storm was comprised of 234 C-141s and 109 C-5s, not including training aircraft. AMC also manages the Civil Reserve Air Fleet (CRAF), a voluntary program established in 1952 and designed to provide commercial airlift augmentation during contingencies. CRAF was activated for the first time during Desert Shield/Storm.

Results in Brief

AMC performed well under demanding circumstances during Desert Shield/Storm, demonstrating flexibility in its response to unanticipated difficulties associated with the airlift operation. AMC's ability to transport sustainment cargo, which is the material required to supply troops after they have deployed, and units to the theater of operations efficiently was constrained by several factors, many of which were outside of its control. However, the difficulties of the massive deployment were largely offset by the lengthy build-up period between August 7, 1990, and January 15, 1991 (Desert Shield). By the start of Desert Storm, DOD and AMC had devised "work arounds" that, to a large degree, alleviated these problems. However, even with AMC's flexibility in devising work arounds, the lack of available aircrews led AMC to extend allowable hours for flight time. AMC

regulations limit these hours to ensure safety for aircrews and to protect against the risk of aircrew fatigue. Further, the long distances and the lack of an in-theater recovery base forced AMC to rely extensively on Air Reserve Component volunteer aircrews before the official call-up of the Reserves was authorized. Finally, the Air Force's decision to activate partial, rather than complete Reserve units caused confusion among AMC's Reserves regarding command structure and administrative procedures.

Principal Findings

AMC Demonstrated Flexibility During Stressful Operation

From the first day of the Desert Shield deployment through the redeployment effort after Desert Storm, AMC maintained a continuous air flow from the United States to Saudi Arabia. During phase I, from August 7 to November 1990, AMC averaged about 65 missions per day. When the President called for additional ground forces to deploy—phase II—missions per day increased to about 100. When hostilities began with Desert Storm, AMC averaged about 125 missions per day. During the Operation, AMC demonstrated flexibility in working around unanticipated constraints and in implementing a series of "firsts." For example, CRAF was activated for the first time to provide additional passenger and cargo airlift capability, and Desert Express, a TRANSCOM initiative, provided a daily flight to Dhahran and Riyadh, Saudi Arabia, to transport the most critical spare parts and medical supplies. That operation was commended by DOD and service officials.

Constraints Limited the Airlift's Efficiency

Several unanticipated constraints on the airlift operation restricted AMC's ability to efficiently move units and sustainment cargo to the theater of operations. AMC's access to off-load locations in the theater of operations was more limited in the initial months of Desert Shield than expected. This limitation restricted airlift throughput—the tons per day AMC delivered to the theater. In addition, large backlogs of sustainment cargo, much of which could have been designated by the services for sealift transportation, caused legitimate high-priority cargo to be delayed at AMC's aerial ports of embarkation.

Actions to Alleviate Constraints

DOD took several steps to alleviate the problems affecting the airlift operation. For example, through political negotiations and physical

improvements to facilities in Saudi Arabia, additional off-load locations were made available to AMC, increasing its throughput capability. DOD activated stage I of CRAF in August 1990, primarily to gain additional passenger airlift. Although AMC needed more passenger and cargo lift at times in December 1990, DOD did not activate stage II until January 17, 1991. Some units were delayed in deploying, which reduced an earlier requirement for stage II. DOD's decision to delay was also influenced by carriers' concerns that stage II activation in December would have a severe impact on their holiday business. DOD also requested foreign airlift donations from the allies during Desert Shield/Storm but met with limited success.

To reduce the large backlogs and speed the delivery of sustainment cargo to the theater of operations, the Joint Chiefs of Staff and the Central Command sent representatives from the services and the Central Command to AMC's major aerial ports of embarkation. The representatives diverted nonpriority cargo to sealift. Another measure to decrease backlogs was the Central Command's allocation of airlift cargo capacity to each service. The allocations imposed a degree of discipline on the transportation and supply requisition systems and served to make field commanders and their supply units aware of the limited airlift available.

Lack of an In-Theater Recovery Base Caused Extensive Problems

AMC's war plans call for an in-theater recovery base where its aircrews can rest and the aircraft can be refueled. GAO does not question the military judgment that led to the Central Command's decision not to provide such a base due to political and physical constraints in the theater of operations. This situation, however, forced AMC to take actions that increased stress on its aircrews. AMC waived certain flight regulations pertaining to flight time limitations, crew rest, and augmented crew complements.

The long flying times necessitated by the lack of an in-theater staging base caused AMC aircrews to reach and in some cases exceed flight time and crew duty day limitations more quickly than anticipated. Thus, despite the extensive participation of volunteer aircrews from the Reserves, AMC required Reserve augmentation earlier than envisioned and relied heavily on Reserve volunteers for the 3 weeks prior to the presidential call-up.

Unanticipated Call-Up of Less Than Full Reserve Units

During Desert Shield/Storm, the Air Force called up its Reserves by subunits or skill categories rather than as whole units. This action was due to the force restrictions under the presidential call-up authority. The

subunits lacked the command structure of the whole units, causing some confusion among reservists. For example, reservists were unclear about compensation and other personnel issues.

Recommendations

GAO makes several recommendations to incorporate the Desert Shield/Storm airlift experience into future contingency plans and exercises. GAO recommends that the Chairman of the Joint Chiefs of Staff direct that cargo allocation systems and cargo diversion teams be established upon execution of contingency operations and that the Commander-in-Chief, TRANSCOM, include a Desert Express-type operation as an option in future plans. GAO also recommends that the Secretary of Defense direct TRANSCOM and AMC to take into account the unpredictable nature of in-theater basing support in future operations plans. GAO further recommends that the Secretary of Defense direct TRANSCOM to explore options for assuring the early availability of transportation-related reservists.

Agency Comments

DOD concurred with all of GAO's findings and recommendations and indicated that implementing guidance concerning cargo allocations, cargo diversion teams, and Desert Express-type operations should be published by April 1993. DOD indicated that the possibility that a recovery base may not be available in a given scenario was already part of the planning process. DOD observed that concern with theater off-load points will increase as the current overseas drawdown continues, and that the United States will have to rely increasingly on bilateral agreements to ensure access to key locations. DOD also pointed out that TRANSCOM has developed draft legislation to create a "Ready Mobility Force" that would, if enacted, permit the use of reservists in the transportation network before a formal decision to call up Reserve forces.

Contents

Abbreviations

AMC	Air Mobility Command
CRAF	Civil Reserve Air Fleet
DOD	Department of Defense
FAA	Federal Aviation Administration
GAO	General Accounting Office
TRANSCOM	U.S. Transportation Command

Introduction

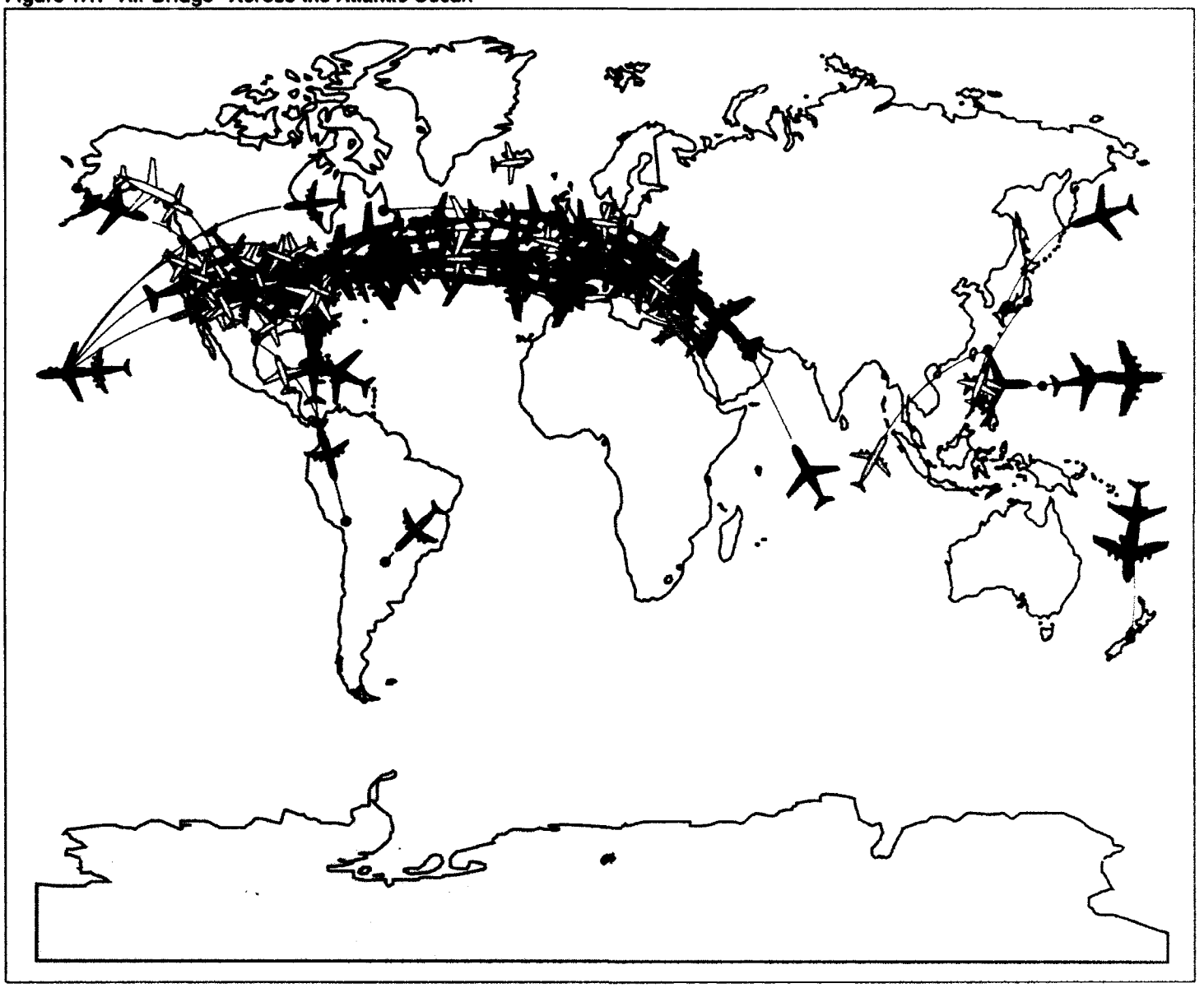
Airlift is the vital component that provides rapid mobility to combat forces. The first strategic airlift mission in support of Operation Desert Shield left the United States for Saudi Arabia on August 7, 1990, 5 days after Iraq invaded Kuwait and the same day the President decided to move sufficient U.S. combat power to the region to deter further Iraqi aggression—phase I of Desert Shield. Phase II began in November 1990, when the President authorized the deployment of follow-on troops. During the first 12 days of the deployment, the Air Mobility Command (AMC)[1] delivered 19,000 tons of cargo to the theater of operations—three tactical fighter wings and most of the 82nd Airborne Division. When Desert Storm ended on February 28, 1991, strategic airlift had conducted about 15,800 missions[2] and transported about 501,000 passengers and 544,000 tons of cargo to the Middle East.

AMC's participation in Desert Shield/Storm began the first day of the deployment and continued for several months after the Operation had ended, as the massive redeployment effort was carried out. Figure 1.1 depicts the aircraft involved in the airlift operation and the aircraft in transit around the world at a point in time.

[1]The Military Airlift Command became the Air Mobility Command on June 1, 1992. To avoid confusion, we consistently use the new title and abbreviation in this report.

[2]Strategic airlift missions consist of one or more sorties from one theater to another. Tactical airlift missions are flown within the theater of operations.

Figure 1.1: "Air Bridge" Across the Atlantic Ocean



Source: AMC.

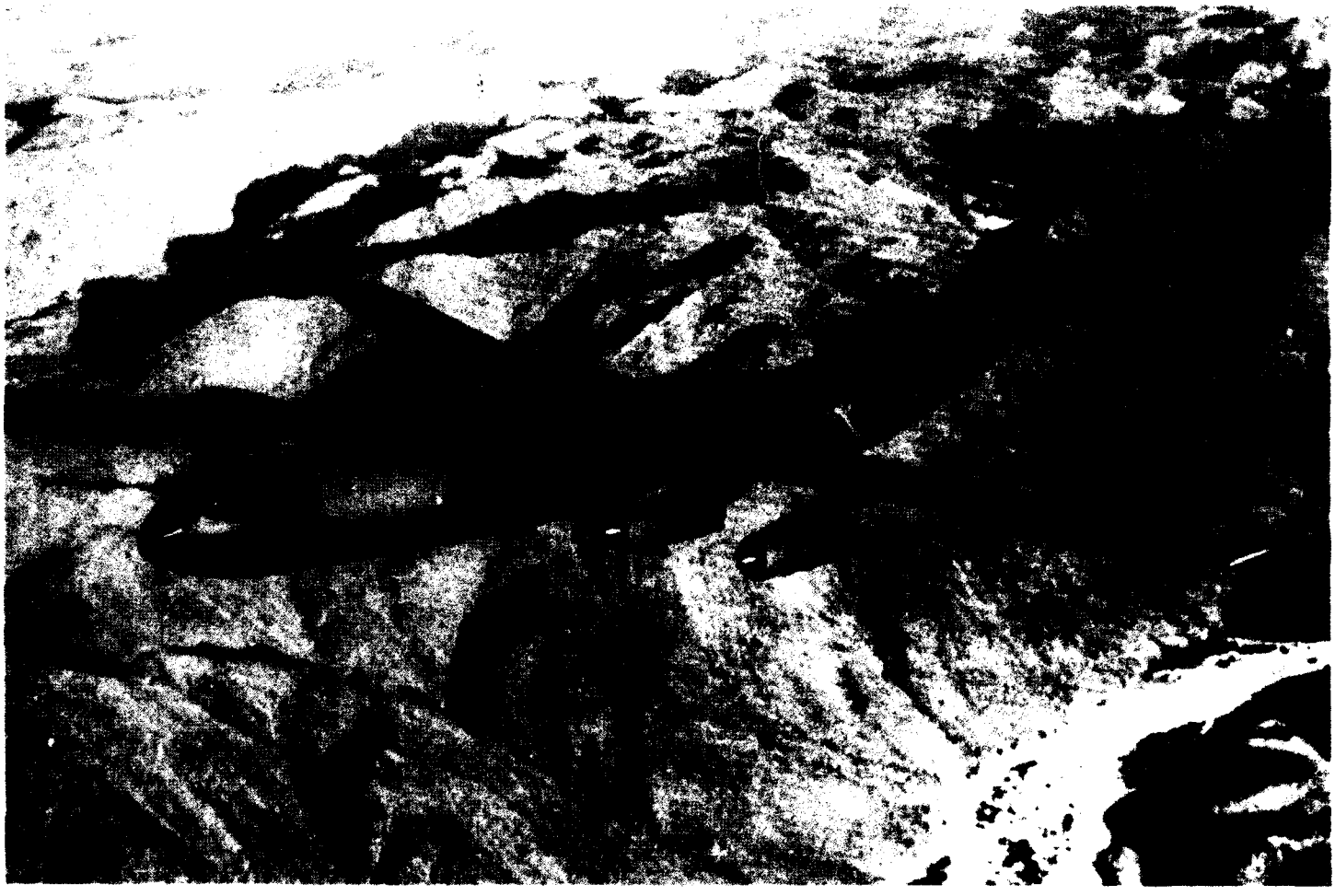
AMC's Extensive Role in Desert Shield/Storm

AMC is a major command of the U.S. Air Force and a component command of the U.S. Transportation Command (TRANSCOM). AMC is responsible for several major missions that serve the Air Force and the Department of Defense (DOD), such as aerial deployment of combat forces and their support equipment, logistical resupply of these forces, and aerial refueling.[3] During a contingency, AMC supports the operation's Commander-in-Chief by providing the airlift that is needed to deploy troops and their equipment, as well as sustainment cargo, to the theater of operations. AMC's strategic airlift fleet consists of 109 C-5s and 234 C-141s, not including training aircraft. The C-141 can carry its maximum peacetime payload of 34.4 short tons[4] a distance of about 2,000 nautical miles unrefueled. The C-5, the only airlifter capable of carrying virtually any piece of the Army's combat equipment, including tanks and helicopters, can transport its maximum payload of 112.7 short tons a distance of 2,000 nautical miles unrefueled. AMC also has KC-10 tanker aircraft that can carry a maximum payload of 33 short tons a distance of 2,000 nautical miles unrefeuled. Figure 1.2 shows a C-141 and figure 1.3 shows a C-5.

[3]During Desert Shield/Storm, the Air Force's Strategic Air Command had responsibility for air refueling. This responsibility was transferred to AMC on June 1, 1992.

[4]A short ton is equal to 2,000 pounds.

Figure 1.2: C-141B Starlifter



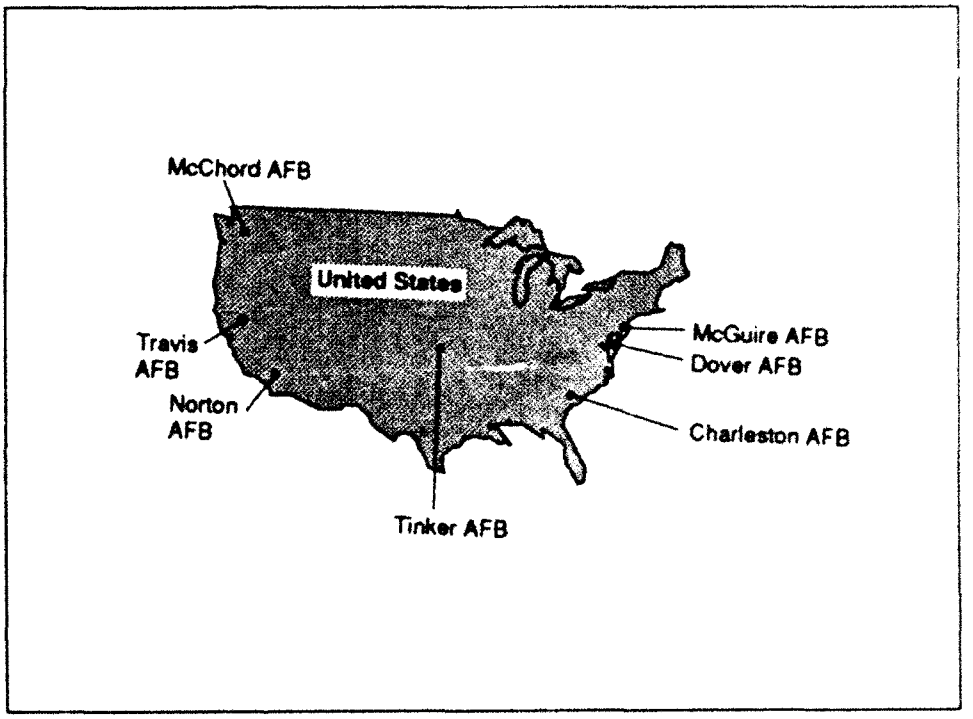
Source: Lockheed Aeronautical Systems Company.

Figure 1.3: C-5B Galaxy

Source: Department of the Air Force

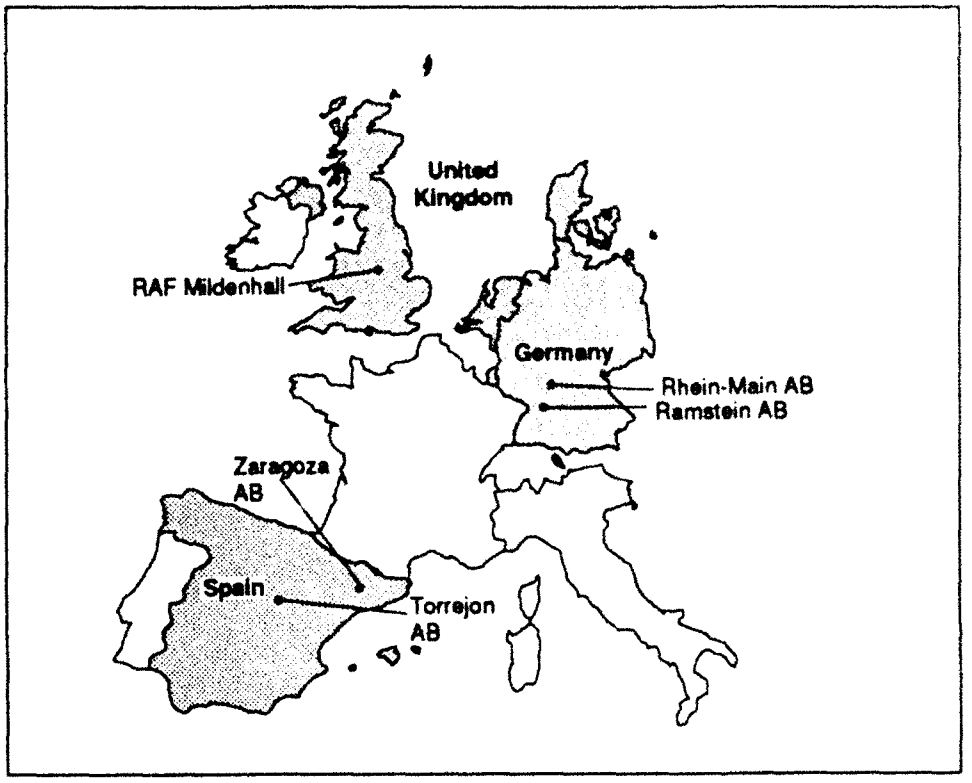
Desert Shield/Storm was a demanding operation due to the distances involved. The theater of operations in Saudi Arabia was about 7,500 miles from AMC's major aerial ports of embarkation in the United States--more than a third of the distance around the world. AMC established airlift routes during Desert Shield/Storm consisting of aerial ports of embarkation, en route locations, and aerial ports of debarkation. The main locations are depicted in figures 1.4, 1.5, and 1.6.

Figure 1.4: Major Desert Shield/Storm Aerial Ports of Embarkation



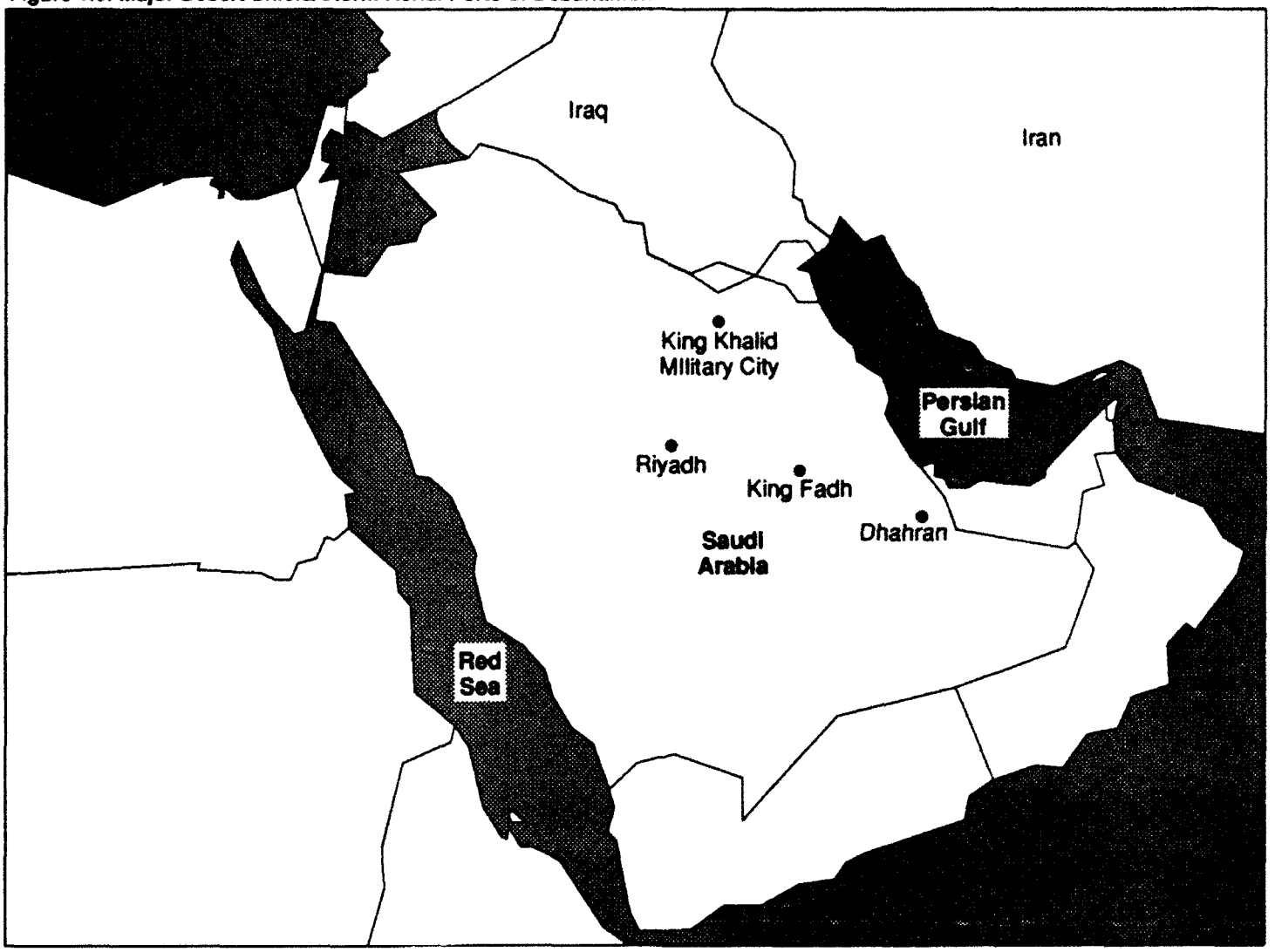
Note: AFB is Air Force Base.

Figure 1.5: Major Desert Shield/Storm En Route Locations



Note: RAF is Royal Air Force; AB is air base.

Figure 1.6: Major Desert Shield/Storm Aerial Ports of Debarkation



First Ever Activation of the Civil Reserve Air Fleet

In addition to its military airlift fleet, AMC manages the Civil Reserve Air Fleet (CRAF) program.[5] CRAF is a voluntary program, established in 1952, to augment military cargo and passenger airlift in time of crisis or war. U.S. flag airlines participating in CRAF fly an agreed upon number of aircraft if needed during a contingency. CRAF can be activated incrementally in three stages, with a total of about 380 long-range international passenger and cargo aircraft available in stage III. CRAF was activated for the first time

[5]See Military Airlift: Changes Underway to Ensure Continued Success of Civil Reserve Air Fleet (GAO/NSIAD-93-12, Dec. 31, 1992).

during Desert Shield/Storm, with commercial aircraft in stages I and II transporting about 64 percent of the troops and 27 percent of the cargo airlifted to the Middle East.

Objectives, Scope, and Methodology

Our objective was to review some of the operational problems AMC faced during Desert Shield/Storm. We identified and assessed (1) constraints on the airlift operation, (2) actions taken by DOD to alleviate these constraints, (3) effects of the Operation on AMC aircrews, and (4) issues regarding the use of AMC reservists. We limited our review to the impact of various factors on AMC's operations and did not question the reasons for certain Central Command decisions that affected AMC. Issues concerning the automated systems used by TRANSCOM during Desert Shield/Storm were addressed in our other work.[6] Furthermore, we did not assess tactical airlift or redeployment issues.

We reviewed DOD documents, including regulations, message traffic, and briefings pertaining to strategic airlift during Desert Shield/Storm. We also met with officials at the following locations:[7]

- Joint Chiefs of Staff, Office of the Secretary of Defense, and Department of the Air Force in Washington, D.C.;
- Air Mobility Command, Scott Air Force Base, Illinois;
- 21st Air Force, 438th Military Airlift Wing, and 514th Military Airlift Wing, McGuire Air Force Base, New Jersey;
- 22nd Air Force and 60th Military Airlift Wing, Travis Air Force Base, California;
- 436th Military Airlift Wing and 512th Military Airlift Wing, Dover Air Force Base, Delaware;
- 437th Military Airlift Wing, Charleston Air Force Base, South Carolina;
- Air Force Reserves Headquarters, Robins Air Force Base, Georgia;
- Tactical Air Command Headquarters (Air Force/Central Command/Rear), Langley Air Force Base, Virginia; and
- the Tactical Air Command's 9th Air Force (Air Force/Central Command/Forward), Shaw Air Force Base, South Carolina.

[6]Desert Shield/Storm: U.S. Transportation Command's Support of Operation (GAO/NSIAD-92-54, Jan. 9, 1992).

[7]In addition to AMC, other designations have changed with the June 1992 reorganization of the Air Force, e.g., military airlift wings are now airlift wings and the Tactical Air Command has been replaced by the Air Combat Command.

In addition, we held discussions with officials at the 3rd Army (U.S. Army/Central Command/Rear).

We performed our review between February 1991 and September 1992 in accordance with generally accepted government auditing standards.

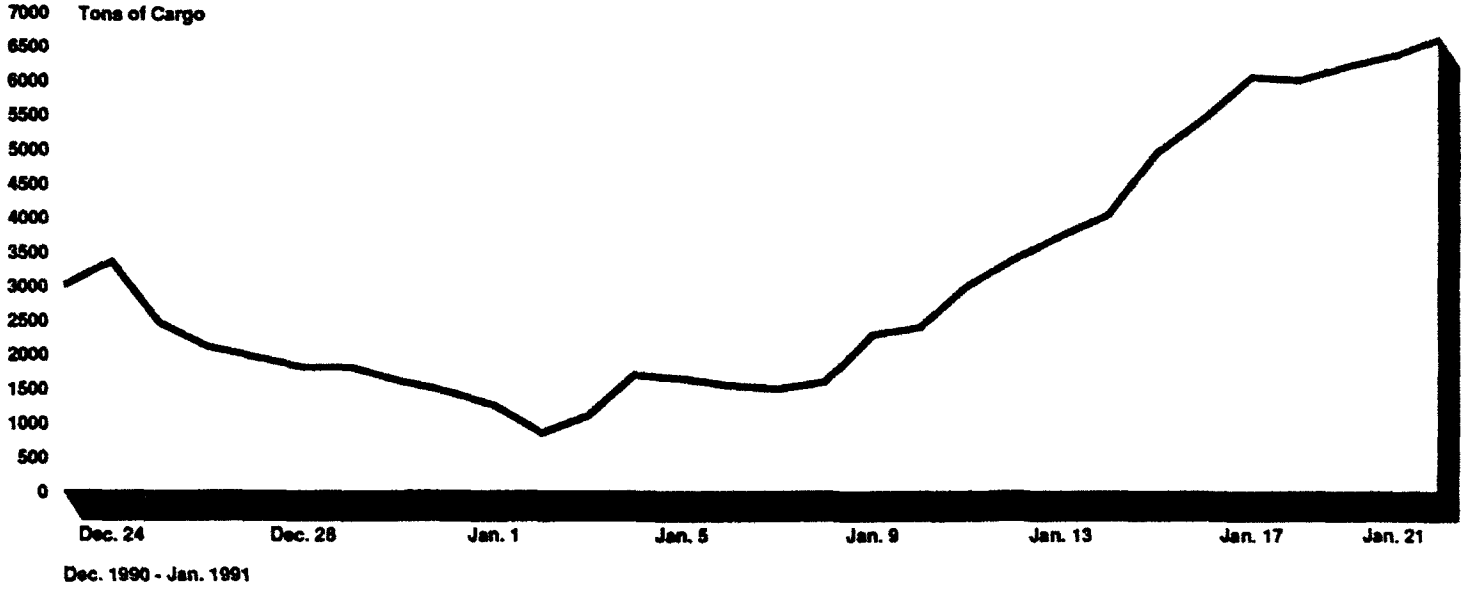
Constraints on AMC's Airlift Operation Affected Cargo Transport and Unit Moves

Several factors, some of which AMC did not anticipate, constrained AMC's airlift operations during Desert Shield/Storm, led to large backlogs at aerial ports of embarkation, and restricted the efficiency with which AMC moved deploying units and their sustainment cargo to Saudi Arabia. These factors included (1) the limited number of locations initially available in the theater of operations for strategic airlifters to unload cargo, (2) the services' failure to regulate their high-priority airlift requisitions, (3) the insufficient cargo airlift capability to meet the Central Command's requirements for sustainment cargo, and (4) the Central Command's constant and rapid changes in its airlift priorities, primarily at the beginning of Desert Shield. DOD and AMC took several actions to alleviate these problems, with varying degrees of success.

Backlogs Reached Inefficient Levels

After units have deployed to a theater of operations, airlift and sealift continue to supply them with sustainment cargo, the material they need for support in the field. While no single "right" amount of cargo backlog exists, a certain amount is desirable for efficient aircraft loading to avoid a situation where airplanes are idle because no cargo is available. The target amount is contingent on the number of available off-load locations and the number of aircraft being loaded. Because of airlift shortfalls during Desert Shield/Storm, backlogs of sustainment cargo at Dover and Tinker Air Force Bases, AMC's main aerial ports of embarkation, grew at a much faster rate than the airlift system could efficiently handle. For example, cargo had to be stored in the parking lots at Dover Air Force Base because normal storage facilities could not accommodate it. AMC's ability to move cargo out of these bases did not exceed 1,300 tons per day during Desert Shield/Storm. At the height of the backlogs—January 1991—over five times as much cargo existed at the ports as AMC could handle. Figure 2.1 shows the cargo backlogs at Dover and Tinker Air Force Bases during December 1990 to January 1991.

Figure 2.1: Peak Period Backlogs at Dover Air Force Base, Delaware, and Tinker Air Force Base, Oklahoma



Limited Number of Aerial Ports of Debarkation Constrained Airlift Flow

Aerial ports of debarkation in the theater of operations are a critical component of the strategic airflow system. At these locations, AMC personnel unload the cargo, refuel the aircraft, and perform basic maintenance, which allows the aircraft to return to service. In addition, airlifters can unload cargo at off-load locations that are not equipped with refueling facilities. AMC's plans called for up to 34 off-load locations in a Desert Shield/Storm-type scenario. However, due to physical and political restrictions, AMC was limited to about 10 during the Operation. This situation limited the number of aircraft that could land at any given time in the theater of operations and, hence, limited the amount of cargo that could be delivered.

Off-load constraints were particularly severe during the initial weeks of Desert Shield. During the first few weeks, only one major aerial port of debarkation, Dhahran, Saudi Arabia, was available. By the 6th week of the deployment, the situation had improved marginally with the availability of Riyadh, Saudi Arabia; however, many of AMC's daily flights continued to land in Dhahran.

While Saudi Arabia has several large runways with good surfaces, most of the airfields lacked the necessary infrastructure, such as refueling capabilities and facilities for aerial port and maintenance personnel, that strategic airlift operations require. Political considerations also limited the number of available airfields. Many Saudi Arabian airfields are privately owned, requiring separate negotiations with each owner for use of the airfields. In addition, the Saudi government's initial reluctance to have a strong military presence in its country contributed to the lack of adequate off-load locations in the theater.

As Desert Shield progressed, DOD made physical improvements to some airfields, such as adding refueling systems. DOD, through negotiations with Saudi Arabia, also obtained access to additional airfields. Eventually, AMC used about 10 off-load locations, but some of these were of limited use, lacking water, fuel, or lights for night landings.

Inappropriate Classification of Cargo Priorities

The services' failure to properly prioritize sustainment cargo during Desert Shield/Storm further contributed to the backlogs at the aerial ports of embarkation and caused some legitimate high-priority cargo to be delayed. DOD has established procedures for assigning priority codes to items for airlift or sealift. Those items designated for high-priority airlift are coded "999." The airlift users, not AMC, are responsible for determining the priority of items. Examples of 999 cargo are spare parts, medical supplies, or other items the field commander determines are needed quickly. The field commanders are expected to use discretion in applying a 999 code to their requests.

During Desert Shield/Storm, however, the services lacked discipline in their use of the 999 code. For example, DOD officials told us of instances when items such as mattresses, coffee, nonperishable rations, and shoe polish were coded 999. The volume of high-priority items strained aerial port personnel and resulted in a situation where, in effect, no priority system existed. Cargo loading became simply a first-in-first-out procedure, and 999 items did not receive expedited treatment. Table 2.1 shows the percentage of cargo coded 999 at the two major aerial ports—Dover and Tinker Air Force Bases.

Table 2.1: Percentage of Cargo Coded 999

	Dover Air Force Base	Tinker Air Force Base
Pre-Desert Shield		
July 1990	15	14
Desert Shield/Storm		
Sept. 1990	50	44
Nov. 1990	44	48
Jan. 1991	64	53
Feb. 1991	62	68

Some DOD officials noted that field commanders might have had a valid reason for expediting cargo movement by using the 999 code for items that normally would not be airlifted, such as concertina wire or material handling equipment. Therefore, without determining the actual need for a given item, it was not possible to determine if the 999 designation was misused in a specific case. However, TRANSCOM, AMC, and the services agreed that overuse of the 999 code hampered AMC's ability to effectively move "truly" high-priority cargo to the theater of operations.

Cargo Airlift Capability Was Inadequate to Alleviate Backlogs

At the start of Desert Shield, when AMC faced constraints due to limited aerial ports of debarkation, it was not able to use all available airlift capability. An August 1990 Air Force document predicted, however, that as aerial ports of debarkation "become more numerous or efficient, airlift availability may become critical." When sustainment cargo backlogs began increasing in early January 1991 (see fig. 2.1), AMC's cargo airlift capability was insufficient to meet the Central Command's sustainment cargo requirements. One factor contributing to this shortfall was that, as in any contingency, AMC could not devote all of its airlift assets to Desert Shield/Storm missions. Another factor was DOD's hesitation to activate additional CRAF cargo aircraft.

Airlift Assets Withheld for Other Priority Missions

Throughout the Operation, the Joint Chiefs of Staff directed AMC to use military aircraft and, after activation, some CRAF aircraft to fly non-Desert Shield/Storm missions. According to an AMC official, there was no set number of aircraft flown daily for Desert Shield/Storm and non-Desert Shield/Storm missions. Examples of the non-Desert Shield/Storm missions included presidential and vice-presidential support, humanitarian efforts such as delivery of food to Greenland, and scheduled flights to fulfill treaty obligations.

DOD Delayed Activating CRAF Stages II and III

Stage I of CRAF was activated on August 17, 1990. Stage I was needed primarily to transport troops and made available to AMC a total of 21 cargo and 17 passenger aircraft. Stage II activation was assumed under the operation plan on which Desert Shield/Storm was loosely based. DOD considered activating CRAF stage II prior to Christmas 1990 to gain additional cargo aircraft. However, TRANSCOM decided to wait until January to activate stage II. Some units were delayed in deploying, reducing the operational need for stage II in December. The decision was also influenced by U.S. carriers' concerns that their holiday commercial business would be disrupted by a stage II activation. DOD officials sought volunteer cargo capability from commercial airlines during this time, and many CRAF carriers volunteered more aircraft than they were contractually committed to provide. The Secretary of Defense activated stage II on January 17, 1991, making an additional 18 commercial cargo aircraft available to AMC.

After stage II was activated, an AMC analysis showed that to meet the Central Command's required delivery date for sustainment cargo prior to initiating Desert Storm, at least some stage III cargo aircraft would be needed. The Air Force agreed, estimating that an additional 25 to 30 long-range international cargo aircraft would be needed to alleviate the sustainment cargo backlogs. In late January 1991, the TRANSCOM Commander-in-Chief discussed the possibility of stage III activation with the Joint Staff, which decided not to pursue activation at that time. DOD officials told us that the main reason for this decision was based on concern that stage III activation would disrupt the commercial airline industry. Consequently, the Central Command moved back its required delivery date for sustainment cargo.

Central Command's Rapidly Changing Priorities Affected Airlift Efficiency

In DOD's peacetime planning process, TRANSCOM and AMC establish a transportation plan that is based on the requirements in the Time Phased Force and Deployment Data portion of the supported Commander-in-Chief's operation plan. The data contain the forces, sequence, and priority of unit deployments; the location of ports of debarkation for specific units; and the amounts and type of cargo associated with the units. TRANSCOM and AMC use this data to assign ports of embarkation, develop feasible transportation schedules for deploying forces, and optimize the use of available transportation capability.

In August 1990, however, as we have reported,[1] neither the operation plan nor the transportation plan was fully developed for a Desert Shield/Storm scenario. This situation, coupled with uncertainty regarding the Iraqi forces' intentions, led the Central Command to frequently change airlift priorities, complicating AMC's airlift effort. AMC's operation plans assume that a fully developed Time Phased Force Deployment List will be in place at the start of an operation. The lack of one at the start of Desert Shield/Storm compelled AMC to operate in a reactive mode to the Central Command's changing priorities, rather than being able to anticipate its airlift requirements. The problem was particularly apparent during the initial weeks of Desert Shield/Storm, but the Central Command's short-notice shifts in airlift requirements continued throughout the contingency, disrupting airflow schedules and cargo load plans and causing confusion for AMC and its airlift users.

Even when a list was completed 3 weeks after Desert Shield began, the Central Command's priorities continued to change on short notice, affecting AMC's ability to schedule airlift missions. AMC's plans call for at least 6 days' advance notice of users' airlift requirements. However, the Central Command set forth requirements for deployment of passengers and cargo an average of 2 days in advance, an insufficient amount of time for efficient scheduling, according to AMC. The need to cancel and change airlift requirements with little notice resulted in increased ground time, reduced daily deliveries, and less efficient use of the aircraft.

The Central Command's priority changes also caused problems for airlift users. Due largely to the short-notice changes in the Central Command's requirements, users sometimes did not inform AMC that they had outsize cargo that required a C-5 rather than a C-141 until the aircraft had arrived to move the unit. On other occasions, AMC sent aircraft to move a unit only to discover that the unit was unaware that it had been scheduled to move or that the unit had already been deployed. Under this circumstance, the aircraft either took whatever cargo was available or went to a second unit, where the same problem might occur. At other times, AMC notified units that airlifters were en route to move them and the aircraft did not arrive on schedule.

[1]Desert Shield/Storm: U.S. Transportation Command's Support of Operation (GAO/NSIAD-92-54, Jan. 9, 1992) addresses the impact of the lack of a fully developed Time Phased Force Deployment List on TRANSCOM's operations.

DOD's Actions to Speed Transport of Sustainment Cargo

DOD initiated several actions to accelerate the movement of sustainment cargo and ensure that the most critical cargo arrived in the theater of operations quickly. These initiatives were (1) establishing teams at Dover and Tinker Air Force Bases to prioritize cargo and divert nonpriority items to sealift, (2) establishing airlift allocations by service for sustainment cargo, (3) requesting airlift donations from North Atlantic Treaty Organization and other allies, and (4) implementing daily express cargo missions.

Diversion Teams Established at Two Aerial Ports of Embarkation

As the need for airlift increased in mid-December 1990 and priority sustainment cargo was becoming delayed in large backlogs, the Joint Chiefs of Staff's Joint Transportation Board and the Central Command established sustainment cargo diversion teams. Consisting of representatives from the services and the Central Command, the teams operated at Dover and Tinker Air Force Bases—the main aerial ports of embarkation. The teams' objectives were to (1) set forth guidance as to which cargo could be diverted to sealift before the user sent it to the aerial ports of embarkation and (2) reduce the backlogs, directing the movement of nonpriority cargo to Saudi Arabia by sealift.

AMC officials acknowledged that the teams helped speed the arrival of priority sustainment cargo to the theater of operations by diverting and prioritizing cargo according to the Central Command's requirements. The service representatives had the authority to divert cargo on the spot rather than going through detailed administrative procedures.

On the basis of the Central Command's requirements, the diversion teams established airlift priorities to begin clearing the backlogs. To maintain the morale of deployed forces, especially as Christmas approached, mail was first on the Central Command's priority list. In one mid-December 1990 report, the Tinker diversion team reported that over 50 percent of all aircraft departing the base were loaded with mail. Other high-priority items that were backlogged included medical supplies, critical repair parts, Christmas meal rations, tents, cots, and sleeping bags. When the diversion teams began their work, the backlogs were partially comprised of items that were not included in the Central Command's airlift priorities. One of the first team reports, for example, identified 1,254 tons of rations for diversion to surface transportation, an amount of cargo that would have required 63 C-141s had it been airlifted as originally intended.

Airlift Allocations Established for Sustainment Cargo

According to Joint Chiefs of Staff procedures, the theater command allocates airlift for sustainment cargo between competing requirements. Services are then assigned airlift based on the command's allocations. In Desert Shield, however, the Central Command chose not to allocate space by service for sustainment cargo during the initial months of the Operation. In December 1990, in an effort to ensure that limited airlift capability was used efficiently to move priority cargo, the Central Command established sustainment cargo airlift allocations. The initial allocations totaled 1,250 short tons per day. In February 1991, this figure increased to 1,600 short tons as AMC was able to devote more airlift to sustainment cargo as opposed to unit moves. (See table 2.2.)

Table 2.2: Daily Cargo Allocations by Service (in short tons)

User	Initial allocation	Revised allocation
Army	425	655
Air Force	190	240
Navy	105	175
Marine Corps	40	110
Defense Logistics Agency	40	5
European Command	150	215
Mail	300	200
Total	**1,250**	**1,600**

Source: AMC

Allocations were based on both the Central Command's requirements and the amount of available airlift capability reported by TRANSCOM. One of the main reasons for allocating airlift was to call attention to the fact that airlift capability was limited and that the services would have to divert a greater amount of lower priority cargo to surface transportation.

While DOD officials agreed that the allocations improved the services' discipline regarding the use of airlift, there were some problems with the system. AMC's cargo movement process in peacetime and wartime begins with a service request to its respective Air Clearance Authority to clear cargo for airlift. After the Air Clearance Authority clears the cargo and the service enters the information into an automated system, the Air Clearance Authority electronically transmits the information to AMC, which transmits the cargo information to the aerial ports. During the Operation, the services' Air Clearance Authorities were also responsible for monitoring the daily airlift allocations. Air Clearance Authority officials, however, stated that it was difficult to keep their services' allocations

within prescribed limits. For example, the Army's initial allocation of 425 short tons was often reached within the first 3 hours of the day. When this occurred and the Air Clearance Authority could not clear any additional cargo that day, shippers bypassed established clearance procedures, sending their cargo directly to AMC's aerial ports of embarkation. AMC had no way of ensuring that each service's allocations were not exceeded; thus, the allocation system was, to some extent, unenforceable.

Airlift Donations Sought From Foreign Countries

At TRANSCOM's request, the Joint Chiefs of Staff and the Department of State sought donations of airlift capability from North Atlantic Treaty Organization allies and other foreign countries throughout Desert Shield/Storm. However, these efforts did not result in a large amount of additional airlift. Some countries demanded a higher payment than DOD was paying its CRAF participants. DOD would not agree to the higher charges. Japan contracted with the U.S. carrier Evergreen Airlines for a small amount of airlift but, due to its constitutional provisions, would not permit the airline to carry such items as ammunition. Korean Airlines donated some airlift support from the United States to Saudi Arabia. European allies airlifted some troops and equipment from Europe to the theater of operations.

Desert Express Flights Moved Highest Priority Cargo

Because the normal airlift system was overloaded, high-priority items were delayed in reaching deployed units. To partially correct this problem, TRANSCOM established Desert Express, a C-141 overnight delivery service for specified critical spare parts and medical supplies from Charleston Air Force Base, South Carolina, to Dhahran and Riyadh, Saudi Arabia. It was intended to move small, high-priority items that could be sent to Charleston by commercial express companies and then be quickly loaded on a C-141. Operating from October 30, 1990, to May 31, 1991, Desert Express flew more than 200 missions to the theater of operations. Each service was allocated a number of pallet positions as well as a weight limit for its daily Desert Express cargo. TRANSCOM adjusted the Desert Express allocations among the services periodically, reflecting each service's level of demand and on February 13, 1991, added a second daily C-141 Desert Express flight.

In addition to Desert Express, on December 7, 1990, TRANSCOM established European Desert Express, a C-141 mission that provided express service for high-priority items from Europe to the theater of operations. European Desert Express flew 92 missions before it ended on March 31, 1991.

Mission-essential parts were first shipped through the existing transportation network from a unit's home base in Europe to Rhein Main Air Base, Germany. The cargo was then loaded aboard the C-141 and delivered to Saudi Arabia. As with Desert Express, each service was allocated a number of pallets on each flight.

We have previously reported on the success of Desert Express.[2] DOD officials believed the operation was very successful. There was a problem, however, with requesters misusing the priority system, that is, coding items that were not legitimate Desert Express cargo. Examples of improperly coded items slated for Desert Express included noncritical spare parts, duplicating paper, sandbags, and tents. As a result, in January 1991, Desert Express experienced backlogs. An AMC official stated that AMC tried to police any misuse of the system. In some instances, cargo that had not been properly cleared and reserved through the procedures established for Desert Express acceptance, was sent to Dover Air Force Base to be transported through the regular airlift system.

Conclusions

The constraints AMC faced during Desert Shield/Storm restricted airlift throughput to a greater extent than AMC and DOD had anticipated. The impact of these constraints would have been greater if the nature of this conflict had not afforded DOD decisionmakers additional time and flexibility, which may not be present in future contingencies.

The Desert Express operation enabled AMC to deliver some types of critical cargo quickly. However, the services' inappropriate use of the 999 cargo code overwhelmed AMC's aerial port operations and caused legitimate high-priority cargo to be delivered late. The Air Clearance Authorities are oriented toward peacetime activity and could not effectively monitor either the services' airlift cargo prioritization or the allocation process. Direction as to the priority of cargo during crises must come from a more central source in order to be effective. For example, the implementation of a cargo allocation system reminded field commanders that airlift assets are limited and enforced a more disciplined approach to cargo prioritization. If the services expect cargo allocations to be imposed early in a contingency, backlogs may be offset earlier and high-priority cargo would not be delayed to the extent it was during Desert Shield/Storm.

[2]Desert Shield/Storm Logistics: Observations by U.S. Military Personnel (GAO/NSIAD-92-26, Nov. 13, 1991).

The cargo prioritization problems were alleviated by the diversion teams at the aerial ports of embarkation. The direct communication they maintained with the Central Command and their authority to direct immediate diversion of nonpriority cargo to sealift were critical to ensuring that the most urgently needed items were sent to the theater of operations by airlift.

Recommendations

We recommend that the Chairman, Joint Chiefs of Staff, direct theater commanders to implement cargo allocation systems upon execution of contingency operations. In addition, we recommend that the Chairman direct the use of cargo diversion teams, comprised of theater commander and service representatives, at AMC's major aerial ports of embarkation.

We also recommend that the TRANSCOM Commander-in-Chief implement a Desert Express-type operation as an option in future plans.

Agency Comments

In agreeing that the limited number of ports of debarkation constrained airlift flow, DOD pointed out that concern with adequate access to theater off-load points will increase as the United States continues its overseas drawdown and that the United States will have to rely increasingly on bilateral agreements to regain access to key locations.

DOD concurred with our recommendation to implement a cargo allocation system early on, establish cargo diversion teams, and include a Desert Express-type operation in future plans and indicated that implementing guidance should be published by April 1993.

Lack of an In-Theater Recovery Base Led to Flight Waivers and Need for Early Reserve Call-Up

AMC's war plans typically call for a crew recovery location in the theater of operations where aircrews can rest and aircraft can be refueled. During Desert Shield/Storm, however, an in-theater recovery location was not available. This situation, coupled with the distance between Saudi Arabian off-load points and European crew recovery locations—about 3,000 miles—forced AMC to augment its aircrews to a greater extent than it had anticipated. Augmented aircrews, because they are supplemented by additional crew members, allow longer flights and extended duty days. In addition, AMC had to waive several flight regulations, including flying hour limits, crew complements, and crew duty days. While these actions were necessary, they reduced to some extent the safety margins built into AMC guidelines. The lack of an in-theater recovery base forced AMC to rely extensively on volunteer aircrews during the initial weeks of Desert Shield and to require an official Reserve call-up sooner than anticipated.

AMC's War Plans Assume an In-Theater Crew Recovery Base

An in-theater crew recovery base is a crucial part of AMC's war plans. Requirements for a strategic airlift in-theater crew recovery base include adequate facilities for crews, such as sleeping quarters and meals, and aircraft refueling capability (1.5 million gallons per day for a Desert Shield/Storm-type operation). Aircraft are refueled at the recovery location so as to lessen congestion and competition for fuel at the cargo off-load points. The aircraft then re-enter the airlift flow with new aircrews while the original crews rest. An in-theater recovery base allows crews to fly shorter missions, reducing (1) the rate at which each crew accumulates flying time and (2) the need to augment crews. The lack of such a base was one of the main differences between the war plans and the actual execution of Desert Shield/Storm.

The Central Command decided not to provide AMC with a recovery base because of the physical space limitations in the theater of operations and its desire to use the available bases for fighter, bomber, and tanker forces. One month after Desert Shield began, AMC and the Central Command held high-level discussions regarding the need for a recovery base, with AMC asserting that it required a recovery base to sustain the pace of airlift operations that the Central Command required. AMC searched for an appropriate location for a crew recovery base but could not find one. American or allied forces were already in place at some possible bases, while others either were deemed politically unsuitable or lacked adequate facilities, fuel, and water.

Compounding the difficulties caused by the lack of a recovery base was the distance between the United States and Saudi Arabia. The flying time required for each AMC mission to the Middle East varied according to the locations of the U.S. aerial ports of embarkation and en route recovery bases in Europe. The missions consisted of two main components—from the U.S. aerial port of embarkation to Europe and from Europe to Saudi Arabia. Each leg was approximately 8 hours one way, not including time spent on the ground for unloading, maintenance, and refueling. Because no in-theater crew recovery base was available, AMC aircrews had to return to Europe after unloading their cargo rather than begin crew rest in Saudi Arabia while a replacement crew returned with the aircraft to Europe. The Europe-Saudi Arabia-Europe component of the flight alone, therefore, required about 16 hours' flying time, in addition to time spent on the ground. (Fig. 3.1 shows the route without a recovery base, and fig. 3.2 shows the route with a hypothetical base).

Figure 3.1: Desert Shield/Storm Airlift Route Without Recovery Base

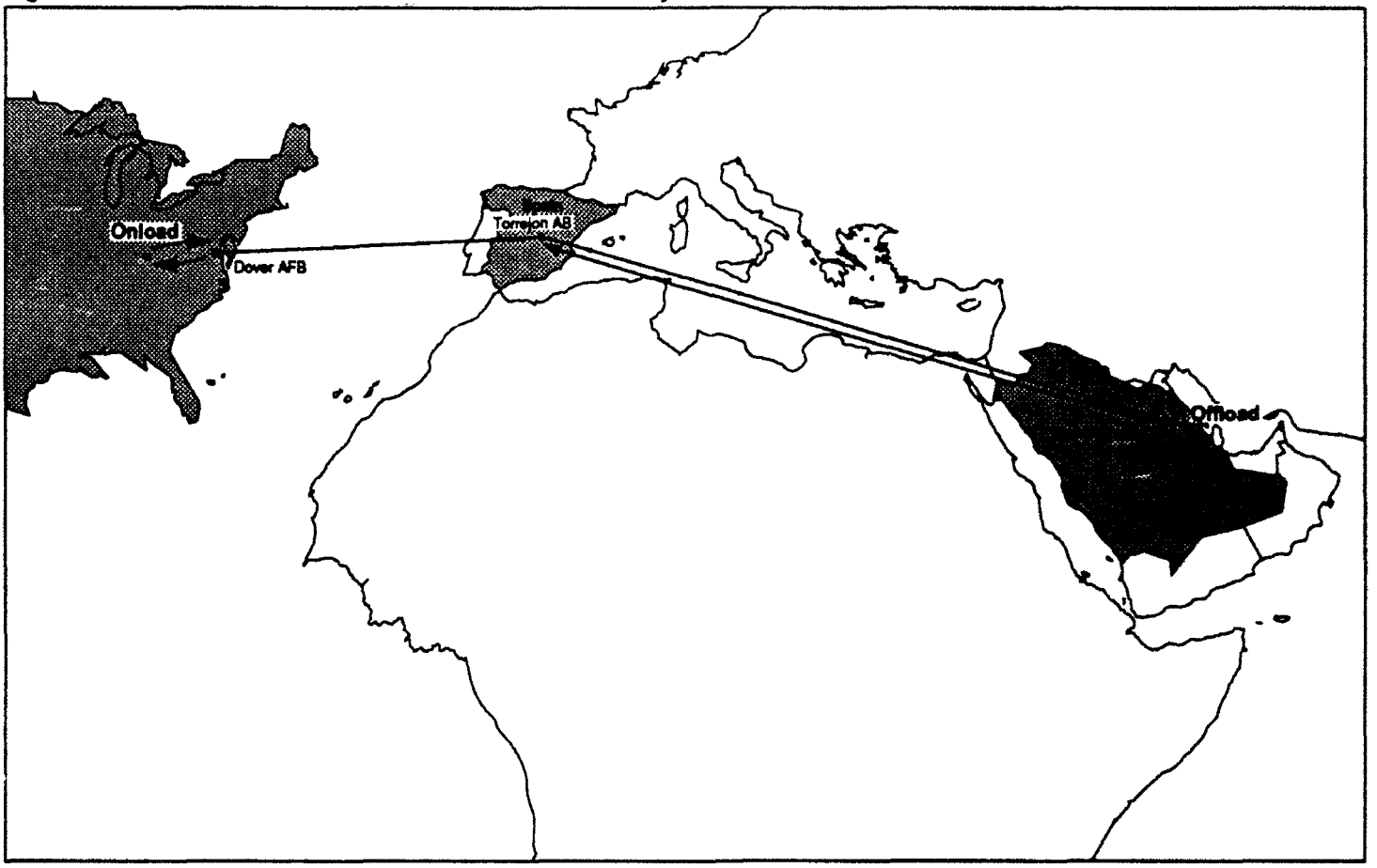
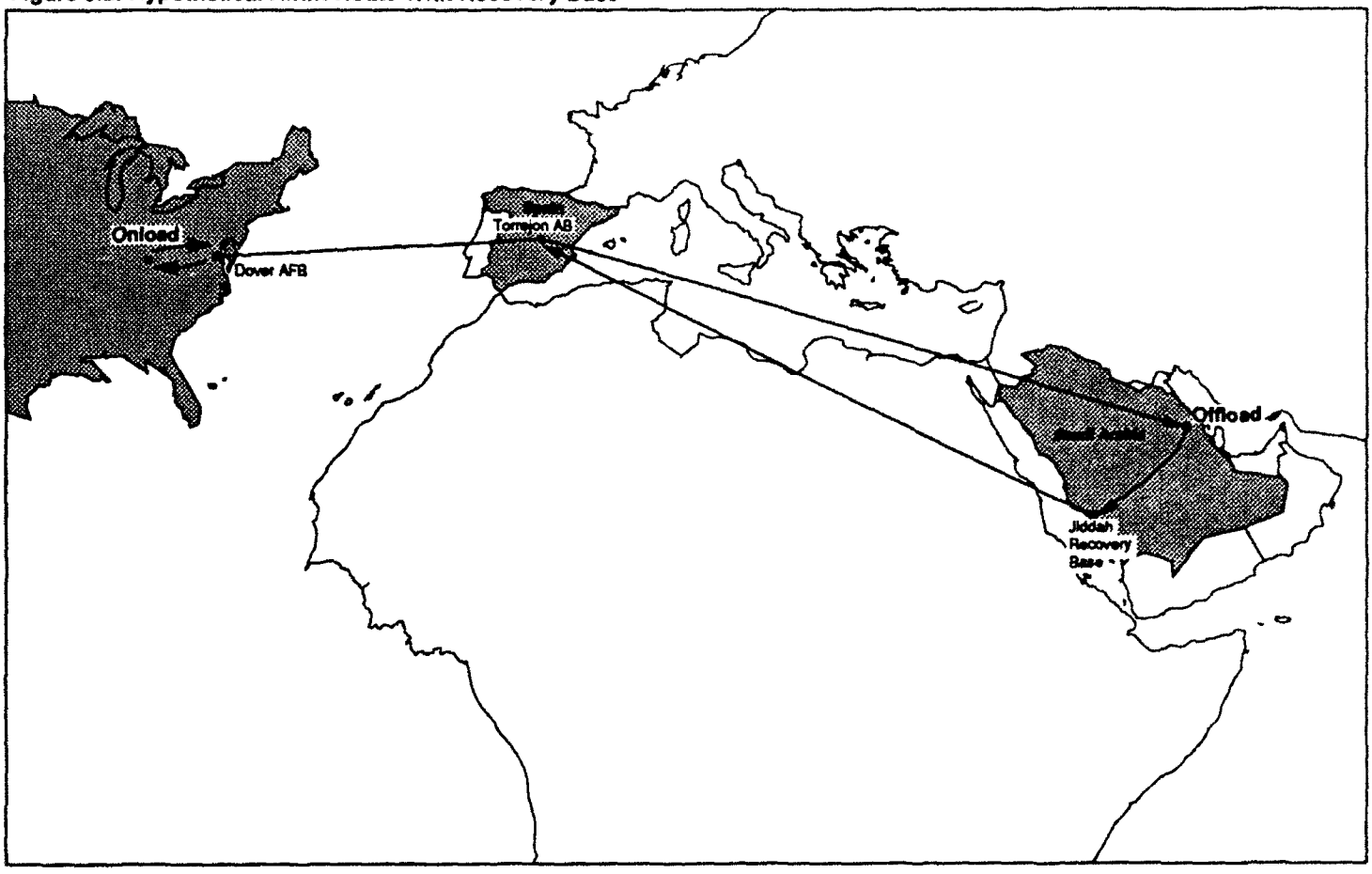


Figure 3.2: Hypothetical Airlift Route With Recovery Base



Actions to Compensate for the Lack of a Recovery Base

AMC took several actions to mitigate the effects of the lack of an in-theater recovery base while carrying out its airlift mission. Due to the distance of the Europe-Saudi Arabia-Europe leg of the mission, AMC had to augment aircrews more extensively than it had anticipated and waive several flight regulations pertaining to (1) flight time, (2) crew duty days, and (3) crew complements. The Federal Aviation Administration (FAA), at the request of the Air Force, also waived certain regulations pertaining to flight policies for civilian carriers under contract to AMC. Furthermore, AMC established pilot augmentation pools to reduce pilots' flying hours.

Augmented Crews Needed on a Regular Basis

Air Force regulations permit aircrews to be supplemented by additional crew members to allow in-flight rest periods. Augmented crews are

authorized when crew duty days exceed 16 hours in a 24-hour period and when at least one leg of the mission exceeds 6 hours' flying time or at least two legs consist of 4 hours' flying time each. Because of the lack of a recovery base in or near the theater of operations, crews had to be augmented to allow the extended crew duty days required to fly from Europe to Saudi Arabia and back to Europe. While AMC expects to augment aircrews to some extent during military operations and has done so in the past, the lack of an in-theater recovery base forced AMC to augment crews on all flights to Saudi Arabia.

Some Flight Regulations Waived

Air Force regulations stipulate that aircrews can accumulate 125 flying hours in 30 consecutive days and 330 hours in 90 consecutive days. When the limits are reached, aircrews are expected to stop flying. The regulations allow these flying hour limitations to be waived if justified by the mission priority, but an upper flight time limit is not provided. During Desert Shield, AMC increased the 30-day flying hour limit to 150 hours. The increase was necessary because crew members on augmented flights continued to accumulate flying hours even when resting aboard the aircraft. AMC officials noted that the change was based on the flight time limitations in effect during the Vietnam War.

During Desert Shield/Storm, AMC had to extend the permissible crew duty days due to the long round-trip flight between en route bases and Saudi Arabia. An aircrew member's duty time normally begins one hour after the individual reports for a mission and ends when engines are stopped at the end of a mission or series of missions. AMC regulations establish a maximum duty period of 16 hours for a basic transport aircraft crew and 24 hours for an augmented crew. AMC waived this requirement during Desert Shield/Storm, allowing 20 hours for basic crews and 28 hours for augmented crews.

AMC regulations require three loadmasters and two first flight engineers to serve on augmented C-5 crews.[1] Because all flights were augmented, however, shortages of loadmasters and first engineers resulted. Consequently, AMC waived augmented crew complement regulations for these positions during Desert Shield/Storm. Most missions were flown with the basic crew complement of two loadmasters and one first and one second flight engineer. An AMC official stated that other crew members on

[1]Loadmasters plan cargo loads, assure emergency evacuation access to the rear of the aircraft, check the loads in-flight for leaks or seepage, provide in-flight services and briefings to passengers, and supervise onloading and off-loading operations. First engineers inspect aircraft, check the fuel system and electrical components, and perform other required procedures.

board assisted with loadmaster and flight engineer functions as they were able in order to accommodate the crew shortages.

FAA Waived Regulations for Civil Carriers

During Desert Shield/Storm, civil air carriers operated under contract to DOD. The Federal Aviation Regulations pertaining to FAA and Department of Transportation flying hour limits, duty days, and sleeping accommodations for civil carriers differ from AMC regulations. Prior to Desert Shield, FAA and AMC had formulated an agreement that, in the event of a national emergency that required activation of CRAF stage III, flying hour limitations and other regulations would be waived in the interest of national security. However, the two agencies had not worked out details concerning FAA waivers in a military operation that did not require a stage III activation. During Desert Shield/Storm, FAA granted carriers permission to deviate from some flight regulations but only for limited periods of time and within certain limitations.

Flight time limitations as set forth in the Federal Aviation Regulations stipulate that aircrews operating on long-range international flights may fly up to 100 hours in a 30-day period and up to 300 hours in a 90-day period. For augmented crews, the flying hour limitations are 120 hours in a 30-day period and 300 hours in a 90-day period. Crew duty days are set at 12 hours per 24-hour period. Furthermore, the regulations direct that "adequate sleeping quarters" be available on the aircraft. This provision refers to bunks or cots rather than reclining passenger seats. While AMC's strategic airlifters are equipped with full bunks for the crews, civilian aircraft typically are not.

Within the first month of Desert Shield, the Air Force requested that FAA waive its 30- and 90-day flying hour limits, crew duty day limits, and sleeping quarter standards in the interest of national security. The Air Force noted in its request that the "intensive flying requirements of our current Middle East crisis are beginning to create flight and duty limitation problems for our CRAF carriers." FAA extended the 30-day flying hour limit to 150 hours and allowed crews to use reclining passenger seats for crew rest during the contingency.

FAA did not consider it "prudent," however, to grant relief from the 90-day flight time limitation until January 1991, when AMC reiterated its request, noting that "approval of reasonable waivers at this critical time is essential to the national defense." FAA granted a 90-day flight time deviation to 340 hours, effective for 30 days only and restricted to CRAF cargo carriers.

First Pilot Pools Increased Pilot Availability

By late September 1990, when it became apparent that an in-theater recovery base would not be available, AMC officials were concerned about aircrew availability. In particular, they were concerned about a potential shortage of pilots. Pilots on the augmented crews used available crew duty time 50 percent faster because three pilots, rather than two, were required on flights. Early in Desert Shield, aircrews were augmented on all components of the mission (from the United States to Europe and then from Europe to Saudi Arabia and back). Once discussions ceased between AMC and the Central Command about prospects for a recovery base, "pilot augmentation pools" were established at European en route recovery locations to help alleviate the rapid accumulation of pilots' flying hours. The pools consisted of first pilots or higher. First pilots are experienced copilots with additional training to make them qualified to occupy the aircraft commander's seat in an augmented crew.

AMC based the pilots, both active duty and reserve personnel, in the pools at en route locations to augment flights from Europe to the theater of operations and back again. Thus, this leg of the mission was flown with three pilots on board: a commander, a first pilot, and a copilot. Flights from the United States to Europe were flown in a basic crew complement, with a commander and a copilot. By augmenting only the Europe-Saudi Arabia-Europe portion of the mission, AMC alleviated some of the high crew costs of augmenting all legs of the mission.

Regulation Waivers and Delayed Reserve Call-Up May Have Increased Risk for Aircrews

The actions AMC took to cope with the lack of an in-theater recovery base reduced, to some extent, the safety margins built into its regulations. While a certain amount of risk is anticipated during wartime, increased flying hours and extended duty days increased the safety risk borne by AMC aircrews.

Some Aircrews Exceeded Flying Hour Limits

During the initial weeks of Desert Shield, some active duty aircrews exceeded, and many others approached, AMC's expanded flying hour limits. AMC could not provide us with a verifiable number of aircrews that reached or exceeded the 150-hour limit in a 30-day period due to a lack of reliable data. However, the Air Force noted that by the third week of the deployment, crew members had "rapidly approached and exceeded" their 30-day flying hour limitation. Air Force and AMC officials affirmed that there were many cases when the limits were exceeded. They stated that

the flying hour situation had become critical by the time AMC activated sufficient numbers of Reserve aircrews in early September 1990.

During Desert Shield/Storm, as in past contingencies, individual crew members were responsible for keeping track of their own flying hours and reporting their flying hour status upon arrival at the en route locations and at their home squadrons. Thus, AMC had no method of maintaining information on individual crew members' flying hours on a "real time" basis. AMC officials told us that, using information provided by the squadrons, they carefully tracked individual crew members' flying hours during the initial weeks of Desert Shield. However, AMC could not provide us with individuals' flying hour data because the information had been purged from the data base; historical data on flying hours were not maintained once the Operation ended. Furthermore, AMC officials reported that their ability to properly manage aircrew resources was significantly restricted because of the lack of information.

Extended Crew Duty Days Resulted in Aircrew Fatigue

Extended crew duty days necessitated by the augmented crews tired aircrews rapidly, according to DOD officials. They stated that the lack of a recovery base in Saudi Arabia resulted in an airlift operation that was not as safe as it could have been. The lack of an in-theater recovery base was the "single worst contributor to crew fatigue and premature accumulation of flying hours," according to AMC. Although no major accidents occurred that could be attributed to fatigue,[2] several officials told us that crews made mistakes due to fatigue, particularly in maintaining airspeed and altitude. DOD officials also told us that aircraft commanders had occasionally requested that missions be delayed or another crew take over when their crews were too tired to fly safely. To their knowledge, those requests were never denied.

As part of an exercise scheduled for September 1990, the Air Force had planned to initiate a field study to evaluate aircrew fatigue associated with flying 150 hours in 30 days. With the onset of Desert Shield, however, the Air Force proceeded with a modified study, using data collected from 14 C-141 pilots. The results of the study showed that marked levels of fatigue were reported when crew duty days were extended to maximum regulated duration and that an increased probability of performance degradation could be inferred with these levels of fatigue. Preliminary data also suggested pilots with more than 140 hours in a 30-day period were

[2]On August 29, 1990, a C-5 aircraft crashed on takeoff from Ramstein Air Base, Germany, en route to Rhein-Main Air Base, Germany. The accident was attributed to technical failures.

more fatigued and required more recovery sleep than pilots with fewer hours. The report suggested the current limit of 125 hours be maintained and waived to 150 hours when necessary and recommended that this issue continue to be evaluated.

Reserve Aircrews Were Needed Early

The concerns about aircrew availability stemming from the lack of an in-theater recovery base caused AMC to require Reserve augmentation very early in the deployment. Because the President's authority to call up Reserve forces was not exercised until August 22, 1990, AMC had to rely extensively on Reserve volunteers for a longer period of time than anticipated. Even after the call-up authority, AMC did not immediately activate all of its C-5 reserve aircrews. Although AMC's Reserve activations proceeded fairly smoothly, the activation by unit type codes degraded unit cohesiveness, according to AMC officials.

AMC Relied Extensively on Volunteer Aircrews

AMC's use of volunteers from its Reserve forces is vital to airlift operations prior to a presidential call-up of Reserves under 10 U.S.C. 673b. The use of volunteers allows AMC to continue its airlift operation while the President and the Secretary of Defense determine if an involuntary call-up of Reserve forces is necessary and supported by the public. Because Reserve activation is a sensitive issue, the National Command Authorities seek to garner sufficient public will before taking this action.

During Desert Shield, Air Reserve Component volunteers augmented AMC's active duty aircrews from the first day of the deployment, which was about 3 weeks before the President's decision to authorize an involuntary call-up. From the outset, AMC was heavily dependent on volunteer reservists to provide essential strategic airlift. In August 1990, for example, volunteers flew 42 percent of all strategic airlift missions. According to Air Force officials, if these numbers of reservists had not volunteered, active duty aircrews would have reached and exceeded flying hour limits much sooner than they did.

Although the volunteer response was fundamental to AMC's airlift operations, the extensive reliance on volunteers caused several problems. For example, because some volunteers flew missions on an irregular basis or only on weekends, AMC could not plan on them to be available on a regular schedule. Also, because so many reservists had volunteered by the time Reserve units were officially activated, some units were left with critical personnel vacancies. Air Force Reserve officials stated that

volunteerism works well in situations with small requirements and of short duration (less than 30 days), but otherwise, it becomes difficult to fill vacant positions with qualified volunteers.

AMC Reserves Were Activated

About 50 percent of AMC's aircrew and aerial port personnel during Desert Shield/Storm were from the Air Reserve Component. AMC reservists performed the full range of AMC's missions, which included military airlift of troops and cargo, aircraft repairs and inspections, and cargo management. On August 22, 1990, the President exercised his authority under 10 U.S.C. 673b to call to active duty and deploy as many as 200,000 individuals for no more than 180 days (90 days plus a 90-day extension). The President delegated this authority to the Secretary of Defense who instructed the service Secretaries to call up 48,800 initial reservists. Of this total, the Air Force was permitted to activate 14,500. The service Secretaries were later authorized to activate additional reservists. During Desert Shield, AMC activated 3,149 reservists. On January 18, 1991, 2 days after Desert Storm began, the President signed an executive order mobilizing U.S. forces under 10 U.S.C. 673, permitting him to call up to 1 million reservists to active duty for up to 2 years. AMC eventually activated about 20,000 reservists (including Air National Guard personnel).

Reserve Aircrews Not Activated Immediately

On August 25, 1990, 3 days after the initial presidential call-up of Reserves, AMC activated three C-5 Reserve squadrons and two C-141 Reserve squadrons—about 19 percent of the total strategic airlift Reserve aircrew capability.[3] Active duty aircrews were rapidly accumulating flying hours and some, particularly C-5 pilots, were exceeding flying hour limits by this time. However, it was not until a week later that AMC activated the remaining C-5 Reserve aircrews. AMC did not activate any additional C-141 squadrons until September 9, 1990. According to AMC and Air Force officials, AMC may have hesitated too long in activating a sufficient number of Reserve aircrews to relieve the active duty crews and Reserve volunteers. They noted that it was a difficult decision requiring extensive discussion with Air Force headquarters.

By early September 1990, AMC had activated all of its C-5 Reserve aircrew capability of 1,328 personnel (7 squadrons). Available flying hour information showed that C-5 Reserve pilots' flying hours exceeded those of their active duty counterparts during September, October, and November 1990. AMC officials told us that active duty crews had

[3]These numbers include both Air Force Reserve and Air National Guard personnel.

accumulated so many flying hours during the first 30 days of Desert Shield that they were required to reduce their schedules temporarily to gain available flying time. Between October and December 1990, the airlift operation slowed and AMC did not activate any additional C-141 aircrews until January 1991.

Selective Activation of Reservists Caused Administrative and Morale Problems

Unless otherwise authorized by the Secretary of the Air Force, members of Air Reserve Component units are ordered involuntarily to active duty only with their units, thereby ensuring that their command structure remains intact. However, in Desert Shield/Storm, reservists were deployed by unit type code,[4] without the preexisting organizational structure and clear command relationships of their units. As a result, reservists experienced unexpected administrative and morale problems, such as confusion regarding compensation and other personnel issues.[5]

The Air Force was compelled to create subunits from larger units to maximize the efficiency of reserve activation because of the reserve call-up size restrictions. According to AMC officials, this restricted call-up excluded the support elements of some forces, such as unit commanders and administrative personnel. For example, AMC activated only four drivers from an Air National Guard unit, while a complete unit mobilization would have activated 116. If AMC had been required to call up entire units, it would have needed the authority to activate 35,500 Air Reserve Component members instead of the approximately 20,000 it actually called up.

According to reservists, however, activation by unit type codes weakened unit integrity and contributed to administrative and morale problems. In addition, our recent report that focused on the problems experienced by reservists during Desert Shield/Storm[6] noted that reservists were unsure about their assigned command structure and about administrative matters, such as compensation and family housing. Reservists used their personal time to take care of administrative problems because they were uncertain who was specifically assigned to assist them in taking care of these

[4]Air Force units can be subdivided by unit type codes, which are functional codes assigned to a small unit, ranging from one individual to several individuals, containing certain skills and designed to perform a specific mission (for example, individual maintenance personnel, such as C-141 flight line mechanics).

[5]These problems were not limited to AMC reservists. See Operation Desert Shield: Problems Encountered by Activated Reservists (GAO/NSIAD-91-290, Sept. 27, 1991).

[6]Operation Desert Shield: Problems Encountered by Activated Reservists (GAO/NSIAD-91-290, Sept. 27, 1991).

matters. According to DOD, AMC aerial port reservists are routinely grouped in unit type codes during operation plan exercises. Therefore, they may have experienced less confusion than the Reserve aircrew personnel we spoke with, who would not necessarily have been prepared for activation outside of their regular units. Clearer guidance from the Air Force on organizational structure and command relationships under unit type code activation may have alleviated the confusion some reservists experienced during Desert Shield/Storm.

Conclusions

Whereas AMC's war plans for a Middle East scenario assumed an in-theater recovery base would be available from the outset of the deployment, such a base was not provided in Desert Shield/Storm. We do not question the military judgment that led to this decision. However, the situation caused crew management problems for AMC and led to the need for extensive flight waivers that, to some degree, decreased the safety margin built into its regulations.

The timing of the Reserve call-up also exacerbated AMC's aircrew problems. The fact that the presidential call-up did not occur until 2 weeks after the deployment began intensified the problems experienced by AMC aircrews—both active duty and Reserve volunteers. Because Reserve activation is a sensitive issue, the National Command Authorities seek to ensure sufficient public support prior to using the call-up authority of 10 U.S.C. 673b. They need to be cognizant, however, that a significant and growing amount of the Air Force's airlift capability is in the Air Reserve Component and that timely force deployments may require activation of these reservists prior to an overall call-up as envisioned under 10 U.S.C. 673b.

While activation by unit type code allowed the Air Force to stay within the limits of its call-up authority, it caused confusion among some reservists and active duty personnel even though this method of activation had been exercised by certain types of reservists. We recognize that this issue has Reserve-wide implications and that AMC alone is not responsible for solving the problem. However, if activation by unit type code is expected to occur again in the future, better advance communication and instruction would alleviate the administrative and morale problems that arose in Desert Shield/Storm.

Recommendations

We recommend that the Secretary of Defense direct DOD and AMC, in ongoing and future planning for regional contingencies, to account for the possibility that appropriate in-theater basing support for strategic airlift crews may not be available.

In addition, we recommend that the Secretary of Defense direct TRANSCOM to explore options for assuring early availability of transportation-related reservists.

Agency Comments

In response to our recommendation that future planning take into account the possibility that appropriate in-theater basing may not be available, DOD concurred and indicated that the possibility was already part of the planning process.

In response to our recommendation that TRANSCOM explore options to encourage early activation of transportation-related reservists, DOD pointed out that TRANSCOM has developed legislative action to develop a "Ready Mobility Force" to prime the transportation network with reservists before a formal decision to activate the 10 U.S.C. 673b presidential call-up.

DOD also noted that Korea and Japan provided the United States with airlift assistance that was symbolically important, although the number of missions flown was not numerically significant.

Comments From the Department of Defense

ASSISTANT SECRETARY OF DEFENSE
WASHINGTON, DC 20301-8000

DEC 22 1992

Mr. Frank C. Conahan
Assistant Comptroller General
National Security and
International Affairs Division
U.S. General Accounting Office
Washington, DC 20548

Dear Mr. Conahan:

This is the Department of Defense (DoD) response to the General Accounting Office (GAO) draft report, "DESERT SHIELD/STORM: Air Mobility Command's Important Achievements and Lessons for the Future," dated October 20, 1992, (GAO Code 392596, OSD Case 9243). The Department concurs with the GAO findings and recommendations and finds the subject report to be exceptionally well done.

The detailed DoD comments on the draft report are provided in the enclosure. In addition, the DoD separately provided a number of suggested technical changes to the draft for accuracy and clarification purposes. The Department appreciates the opportunity to comment on the draft report.

Sincerely,

David J. Berteau
Principal Deputy

Enclosure

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